

CLAIMS

1. An apparatus for use in electroplating a workpiece comprising:
 - an electroplating chamber;
 - 5 a stator assembly;
 - a rotor assembly, disposed for rotation with respect to the stator assembly, including a cathode current control assembly and an internal power source for providing power to the cathode current control assembly.
- 10 2. The apparatus of claim 1, wherein said cathode current control assembly comprises a multi-segment current thief.
3. A current thief for use in electroplating a workpiece comprising a printed circuit board substrate including one or more conductive segments formed on the surface of the printed circuit board substrate and disposed to substantially surround a peripheral region of the workpiece.
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4. The current thief of claim 3, wherein the one or more conductive segments are electrically isolated from one another to facilitate separate biasing of the conductive segments.
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5. A cathode assembly for use in electroplating a workpiece comprising:

a current thief including a plurality of conductive segments, disposed to substantially surround a peripheral region of the workpiece;

5 a plurality of resistors each associated with a respective one of the plurality of conductive segments; and

a single constant current source coupled to each of the plurality of conductive segments via the plurality of resistors for supplying current to each of the plurality of conductive segments.

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6. The cathode assembly of claim 5, further comprising an additional resistor for further coupling the constant current source to the workpiece.

7. The cathode assembly of claim 6, wherein the value of the current supplied to each of the conductive segments and the workpiece is dependant upon 15 the resistive values of the resistors.

8. A method of transferring at least one of control signals and data between a stator assembly and a rotor assembly capable of rotating with respect 20 to the stator assembly comprising the steps of:
actuating an electromagnetic radiation source in controlled bursts, when

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the stator assembly and the rotor assembly are at rest with respect to one another,
said electromagnetic radiation source being associated with one of the stator
assembly and the rotor assembly;
receiving at a receiver associated with the other one of the stator assembly
5 and the rotor assembly the controlled bursts of electromagnetic radiation.

9. The method of claim 8, wherein the electromagnetic radiation
source is a light emitting diode transmitter.

10. The method of claim 8, wherein the electromagnetic radiation
source is an infra-red light emitting diode and the receiver is adapted for
receiving light having a frequency in the infra-red spectrum.